Triac BT134W series

GENERAL DESCRIPTION

Glass passivated triacs in SOT223 envelopes suitable for surface mounting. They are intended for general purpose switching and phase control applications.

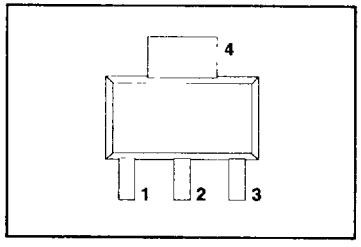
QUICK REFERENCE DATA

SYMBOL	PARAMETER	MAX.	MAX.	MAX.	MAX.	UNIT
	BT134W-	500	600	700[1]	800[1]	
V_{DRM}	Repetitive peak voltages	500	600	700	800	V
$I_{T(RMS)}$	R.M.S. on-state current	1	1	1	1	A
I_{TSM}	Non-repetitive on-state current	10	10	10	10	A

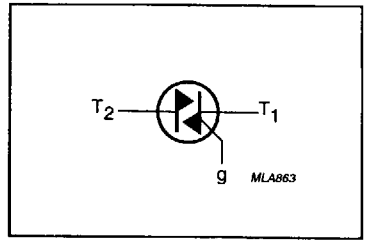
PINNING - SOT223

PIN	DESCRIPTION
1	main terminal 1
2	main terminal 2
3	gate
4	main terminal 2 (tab)

PIN CONFIGURATION



SYMBOL



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134)

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.				UNIT
	Voltages (in either direction)			-500	-600	-700[1]	-800[1]	
V_{DSM}	Non-repetitive peak off-state voltage.	$t \leq 10$ ms	-	500	600	700	800	V
V_{DRM}	Repetitive peak off-state voltage	$\delta \leq 0.01$	-	500	600	700	800	V
V_{DWM}	Crest working off-state voltage		-	400	400	400	400	V
	Currents (in either direction)							
$I_{T(RMS)}$	R.M.S. on-state current	Conduction angle = 360°; T_b = 77 °C	-	1				A
I_{TRM}	Repetitive peak on-state current		-	10				A
I_{TSM}	Non-repetitive peak on-state current	t = 20 ms; full sine-wave; T_j = *120 °C* prior to surge.	-	10				A
I^2t	I^2t for fusing	t = 10 ms	-	0.5				A^2s
dI_T/dt	Rate of rise of on-state current after triggering	I_G = 200 mA to I_T = 1.5 A; dI_G/dt = 0.2 A/µs	-	10				A/µs
	Power dissipation							
$P_{G(AV)}$	Average power dissipation	over any 20 ms period	-	0.13				W
P_{GM}	Peak power dissipation		-	1.3				W
	Temperatures							
T_{stg}	Storage temperature		- 40	125				°C
T_j	*Junction temperature*	Full-cycle operation	-	120				°C
T_j	Junction temperature	Half-cycle operation	-	110				°C

1 These voltage grades not available for D and E type gate selections. (See next page for details of gate selections)

THERMAL RESISTANCES

From junction to board	P.c.b. mounted (see fig 2), temperature measured 1 - 3 mm from tab.	$R_{th\ j\text{-}b}$ = 30 K/W
From junction to ambient	P.c.b. mounted (see fig 2)	$R_{th\ j\text{-}a}$ = 70 K/W

CHARACTERISTICS

T_{mb} = 25 °C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
	Voltages and Currents (in either direction)					
V_T	On-state voltage	I_T = 1.5 A	-	1.2	1.7	V
dV_D/dt	Rate of rise of off-state voltage (exponential method)	T_j = 120 °C; $V_D = V_{DWM}$max; gate open circuit				
		BT134W-500 to 800	100	-	-	V/µs
		BT134W-500E/600E	-	30	-	V/µs
		BT134W-500D/600D[2]	-	5	-	V/µs
dV_{com}/dt	Rate of change of commutating voltage	$-dI_{com}/dt$ = 1.8 A/ms; $I_{T(RMS)}$ = 1 A; T_b = 50 °C; gate open circuit; $V_D = V_{DWM}$max				
		BT134W-500 to 800	10	-	-	V/µs
		BT134W-500E/600E		Not applicable		
		BT134W-500D/600D		Not applicable		
I_D	Off-state current	$V_D = V_{DWM}$max; T_j = 120 °C	-	-	0.5	mA
V_{GT}	Gate trigger voltage	V_D = 12 V	-	-	1.5	V
		V_D = 12 V; T_j = -40 °C	-	-	2.3	V
		$V_D = V_{DWM}$max, T_j = 120 °C	0.25	-	-	
I_{GT}	Gate trigger current	G to T1; V_D = 12 V	-	-	Table 1	mA
I_H	Holding current		-	-	Table 1	mA
I_L	Latching current		-	-	Table 1	mA

Table 1: Gate Characteristics - Maximum Values		T2+ G+	T2+ G-	T2- G-	T2- G+	UNIT
BT134W - 500/600/700/800	I_{GT}	35	35	35	70	mA
	I_H	15	15	15	15	mA
	I_L	20	30	20	30	mA
BT134W - 500E/600E	I_{GT}	10	10	10	25	mA
	I_H	15	15	15	15	mA
	I_L	15	20	15	20	mA
BT134W - 500D/600D	I_{GT}	5	5	5	10	mA
	I_H	10	10	10	10	mA
	I_L	10	15	10	15	mA

2 With $R_{G\text{-}MT1}$ = 1 kΩ

MOUNTING INSTRUCTIONS

Dimensions in mm.

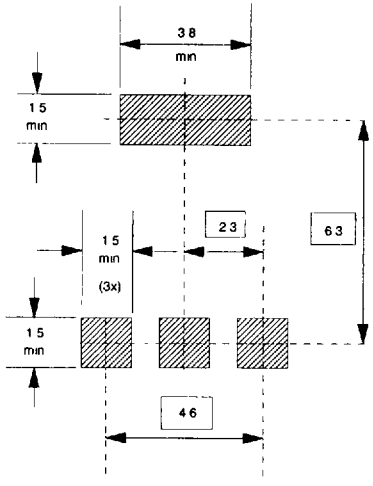


Fig.1. Soldering pattern for surface mounting SOT223.

PRINTED CIRCUIT BOARD

Dimensions in mm.

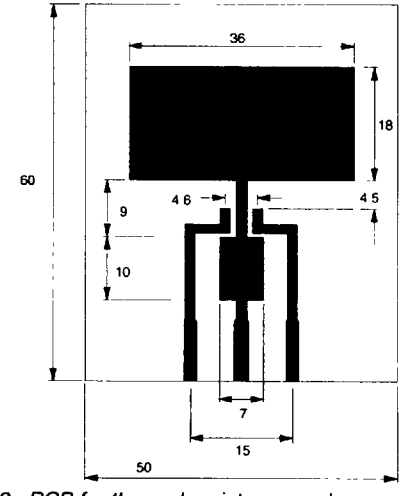


Fig.2. PCB for thermal resistance and power rating for SOT223.
PCB: FR4 epoxy glass (1.6 mm thick), copper laminate (35 μm thick).

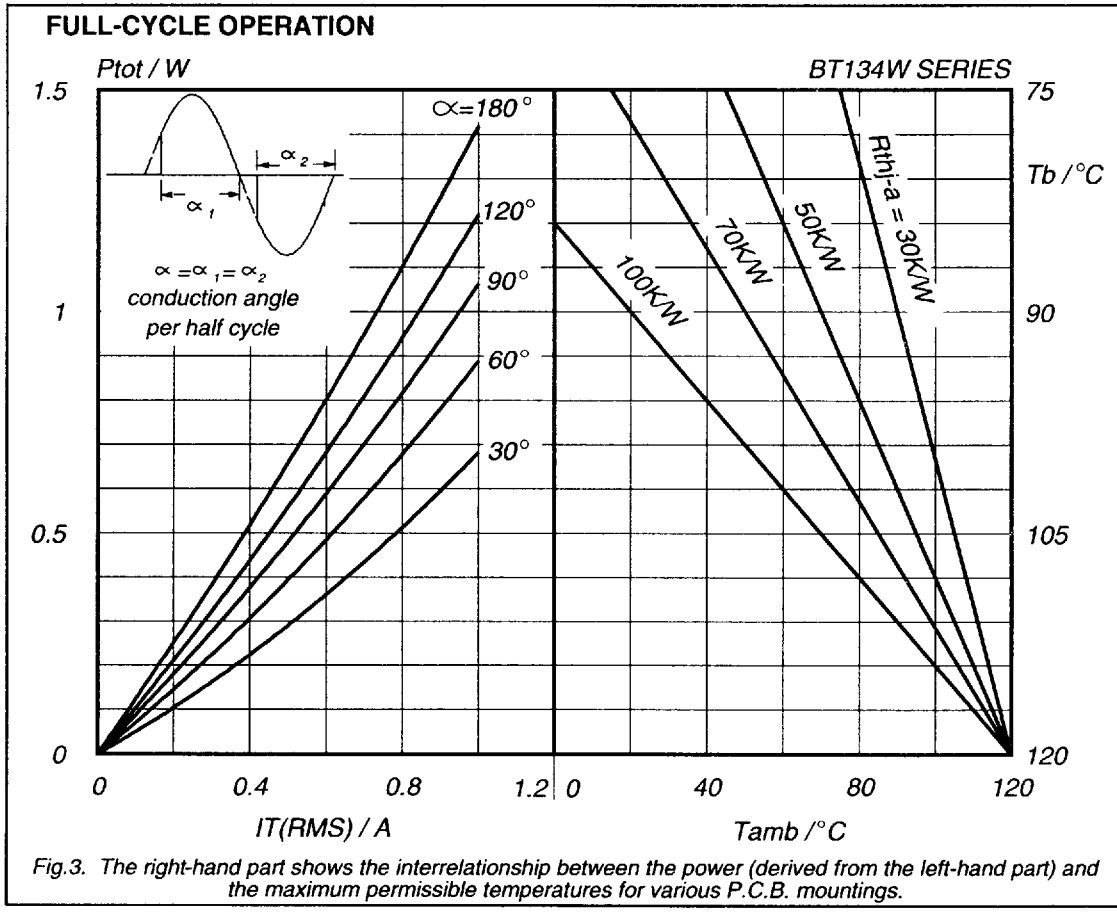


Fig.3. The right-hand part shows the interrelationship between the power (derived from the left-hand part) and the maximum permissible temperatures for various P.C.B. mountings.

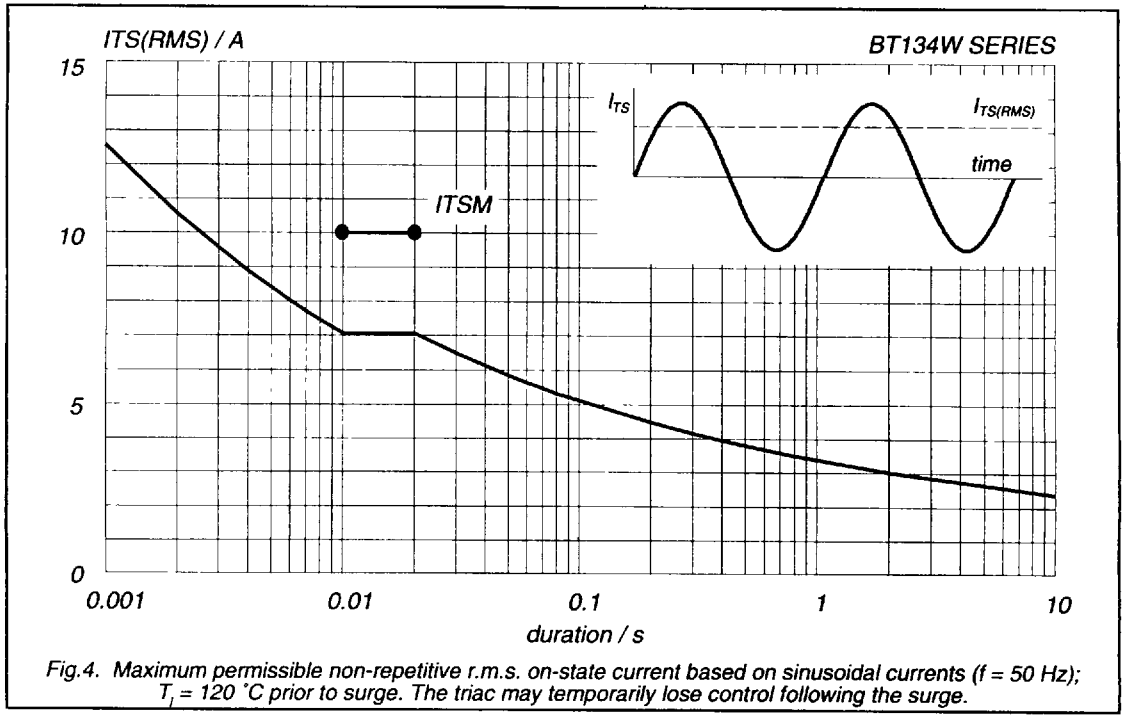


Fig.4. Maximum permissible non-repetitive r.m.s. on-state current based on sinusoidal currents (f = 50 Hz); T_j = 120 °C prior to surge. The triac may temporarily lose control following the surge.

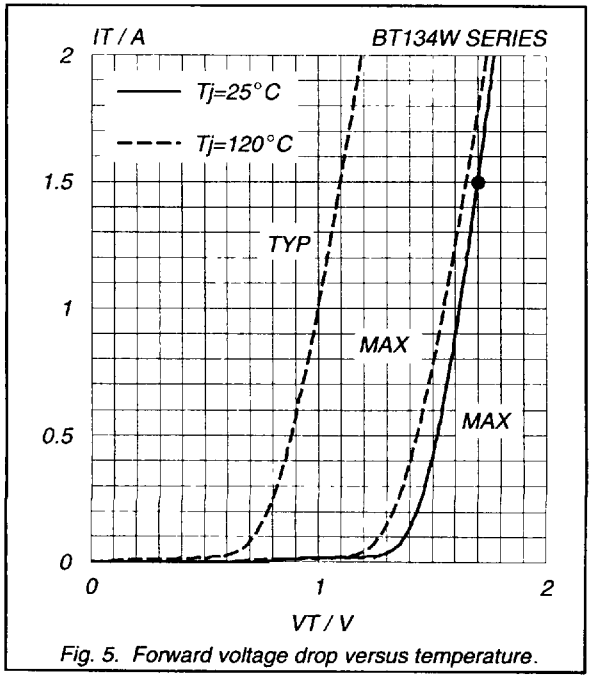


Fig. 5. Forward voltage drop versus temperature.

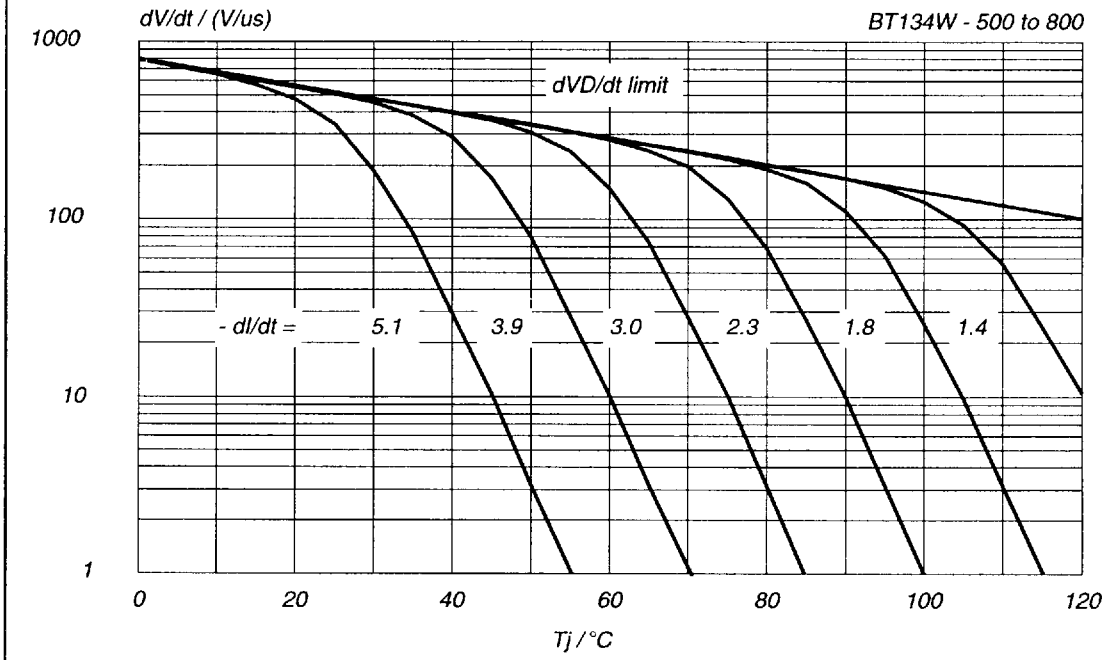


Fig.6. Typical commutation dV/dt for BT134W - 500/600/700/800 versus T_j. The triac should commutate when the dV/dt is below the value on the appropriate curve for pre-commutation dI_T/dt.

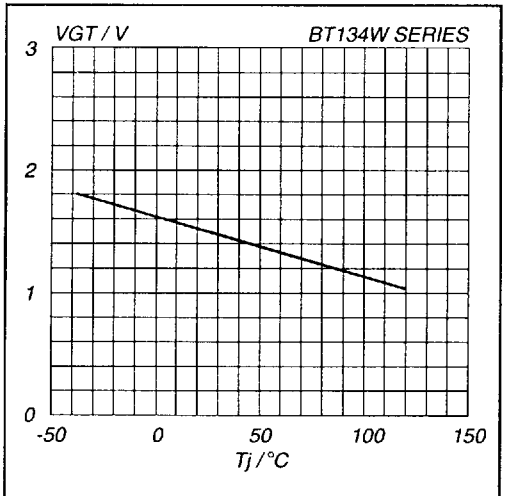


Fig.7. Minimum gate voltage that will trigger all devices, all conditions.

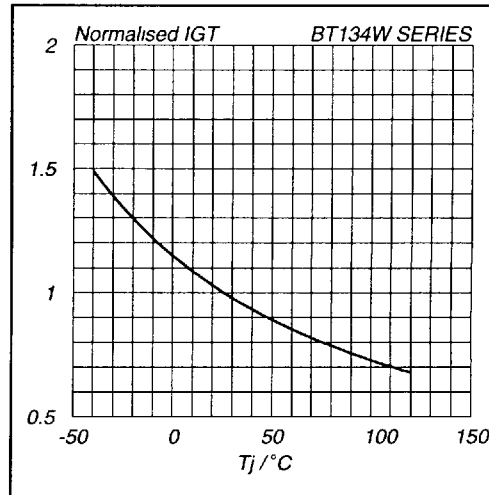


Fig.8. Normalised gate current (i.e. I_{GT} / I_{GT} @ 25°C) that will trigger all devices, all conditions.